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FOREST RESEARCH NEWS

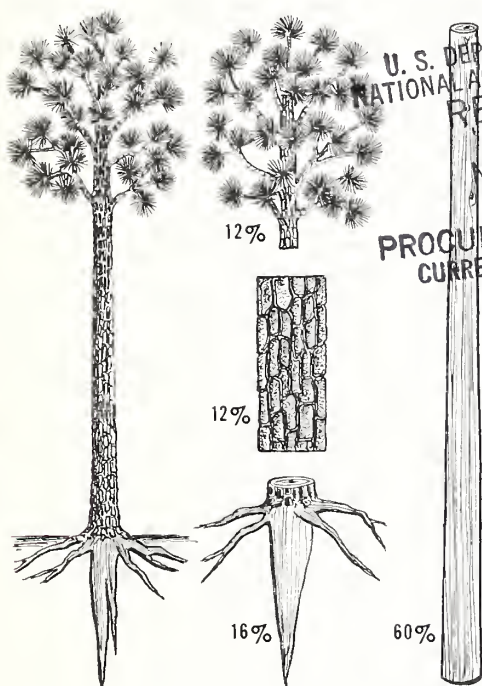
FOR THE MIDSOUTH

September 1973

SOUTHERN FOREST EXPERIMENT STATION, FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE

On Putting Waste to Work

Almost half of every tree cut for marketing remains unused. Stump, roots, bark, branches, needles, and tops are mostly left in the woods to decay. Putting these materials to work would extend fiber supplies by 70 percent.



Wasted parts of a slash pine tree cut for timber account for 40 percent of the oven-dry weight of the tree.

But before this vast amount of material can be put to use, more must be known about its chemical and physical properties. Elaine Howard, a Southern Forest Experiment Station researcher, has studied waste portions of southern pine trees. Her findings appear in two articles in the April 1973 issue of *WOOD SCIENCE*.

In 22-year-old slash pines from an unthinned plantation in central Louisiana, the stem or trunk was found to contain roughly 60 percent of the total oven-dry tree weight. Waste portions ac-

counted for approximately 40 percent of the weight, with 16 percent of it in the tree root and stump, 12 percent in the bark, 5 percent in the top of the stem or bole under 3 inches in diameter, 4 percent in needles, and about 3 percent in branches.

All waste portions had greater lignin and extractive contents than the stemwood, but stemwood had higher specific gravity and higher alpha-cellulose content than any other tree part. Extractive content averaged lower in stemwood than in any other tree part, while needles contained twice the percentage of extractives found elsewhere in the tree. Generally, however, the wood in southern pine stumps and roots did not differ greatly in chemical properties from that in the main stem.

Copies of both articles are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.

Researcher Elaine Howard measures a pine tree root.



Popular Deer-Browse Booklet Is Reprinted

A booklet identifying some 50 browse plants which furnish food for deer in southern forests has been reprinted and is available from the Southern Forest Experiment Station of USDA's Forest Service.

The 78-page publication has photographs of each species and tells where the plants are found, their normal growth habits, seasonal preference by deer, parts taken, and tolerance to browsing. Also included are suggestions to help land managers grow more browse.

Information on individual species was contributed by a wide variety of southern experts on the

particular plants. The material was edited by Lowell K. Halls, Southern Station wildlife habitat project leader, and Thomas H. Ripley, formerly a researcher with the Southeastern Forest Experiment Station, now with the Tennessee Valley Authority.

Browse makes up the bulk of the diet for white-tailed deer, the booklet points out. Ability of an area to support a healthy deer herd is determined largely by the average amount of palatable and available browse during winter as well as summer months. Condition of the plant also influences its use by deer. Slow-growing, suppressed plants seem tougher and less palatable than fast-growing sprouts. And thrifty plants can withstand repeated browsing and still renew their foliage, while stunted plants are rarely able to put out new growth once they are browsed.

Southern forests are capable of supporting enough deer to satisfy a large hunting demand, the researchers say. Though various factors are important, letting the trees grow too thick is mainly responsible for low forage production and correspondingly sparse deer populations.

The booklet, "Deer Browse Plants of Southern Forests," first appeared in 1961 and has been reprinted because of its popularity. It was published in cooperation with the Forest Game Committee of the Southeastern Section of the Wildlife Society. Copies are available on request from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.



In FLOWERING DOGWOOD, flower bracts are snowy white or rarely pink, 1.25 to 2.5 inches long.



FRUIT forms a bright red, clustered drupe, 0.25 to 0.5 inch long.



T W I G S are green or purple, often with whitish bloom.



LEAVES are simple, dark green above, light green and glaucous below, often clustered near end of branches. Blades 3 to 5 inches long, 1.5 to 2.5 inches wide.

Mechanical Cone Harvest Painless for Pine Trees

Shaking pines with a machine to bring down the cones doesn't injure the trees. And it's a big help in collecting cones for seed.

For many years southern pine cones have been harvested by climbing trees or by collecting cones from tops left after logging. Demand for seed is growing and few people are interested in collecting by hand. So land managers are looking for new ways to harvest the cones. Tree shakers promise help.

In 1967 the Louisiana Forestry Commission reported success in harvesting a cone crop with tree shakers. But some people were worried that the shakers might hurt the tree—affect its growth and future cone production. So Southern Forest Experiment Station researchers started a check

on some slash pines to find out if the fears were based in fact.

They shook some study trees for 12 seconds in 1967 and left some comparable trees unshaken. Then they counted cones on all the trees through binoculars in 1968, 1969, 1970, and 1971. Tree diameters and heights were measured at the start and end of the study.

Now, 5 years later, they report no significant difference in the vigor or cone production of the trees. Moreover, no disease or insect attack was noted. So researchers conclude that shaking of slash pine trees by trained operators does no harm.

Additional details are available from the Southern Forest Experiment Station.

New Report Gives County Forest Data

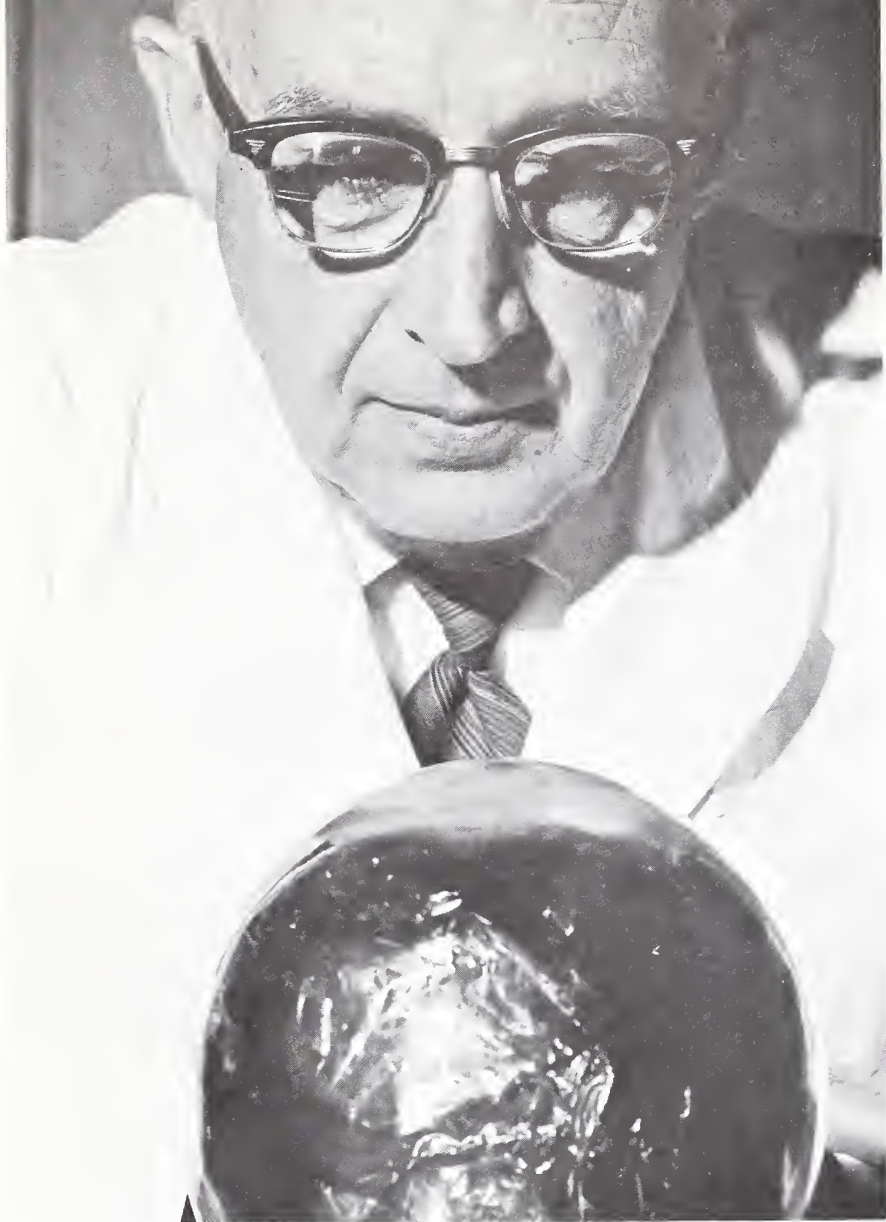
Forest area statistics for counties in seven Midsouth States, including some data never before published at the county level, are available in a new report by the Southern Forest Experiment Station. Published for the first time are acreage statistics on Louisiana, Texas, and Oklahoma. Data for Alabama, Arkansas, Mississippi, and Tennessee are also included.

As a special feature, tables on ownership, forest type, stand size, and site class have been compiled for all Midsouth States.

The information was gathered during 1963-1972 by the Forest Resources Research Unit. The 64-page report, Resource Bulletin SO-40, is available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.

Mechanical tree shaker attached to slash pine to harvest cone crop.





Veteran researcher Bill Mann peers into a crystal ball to make reforestation predictions.

Looking Ahead In Forestry

While not claiming to be a Jules Verne of forestry, veteran Southern Forest Experiment Station researcher William F. Mann, Jr., does foresee revolutionary changes in reforestation. Here are some of his prophecies.

Planting and seeding, rather than natural reforestation, will become steadily more important as seed orchards come into production. They offer the only

means by which landowners can take advantage of genetically improved trees, bred specifically for fast growth and resistance to insects and diseases. Natural regeneration will be relied on less than at present, but will still be important on poorer sites, near recreational facilities, and on areas of aesthetic importance.

Machine planting will continue to be the main method of arti-

cial regeneration, especially in the South where flat and rolling topography predominates. Techniques will be developed to speed planting and lengthen the season. Containerized stock may be one good way. In this method, a pine seed is germinated in a small pot or plug of soil or other medium. Eight or more weeks later it is planted with the root undisturbed. Containerized stock initially grows faster than bare-rooted seedlings, and enables yearlong planting to be done in the South. Because seedlings are of uniform size, further mechanization of planting will be feasible.

For northern regions, where conventional stock is grown in a nursery for 2 to 3 years, containerization will cut the culture time to about 8 months and substantially reduce costs of planting.

While most planting will be done from ground-traveling machines, three aerial methods have been proposed. All will require more research, but methods will be perfected to plant seedlings from the air. These methods will facilitate reforestation of steep, rough sites.

Plastic, biodegradable containers for seedlings, while not now commercially available, are a possibility for the future. Micro-organisms in the soil cause them to "decay," and the rate of breakdown can be regulated.



New methods of direct seeding will also be part of the reforestation revolution. At present, seeds must be coated with a repellent that will protect them from hungry birds, rodents, and insects. Researchers are seeking ways to eliminate all chemical repellents by encapsulating seed or enclosing it in a wafer. These techniques have the potential advantage of increasing and hastening germination by providing a constant supply of moisture.

Swedish foresters have developed a wafer made of compressed moss. Research has started at the Southern Station on seeds encapsulated into balls made of sand, vermiculite, and a compound that absorbs water readily.

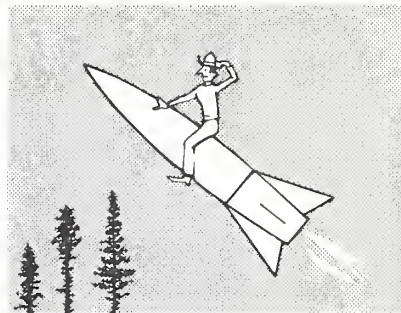
Aerial seeding in rows, under development at Auburn University with financing from the Southern Station, will also be a boon. It will permit at least a

50-percent reduction in sowing rates, so that genetically improved seed can be used with nearly the same efficiency as in nursery operations. Moreover, the rows will make it economical to harvest the stand by machine.

Developments described so far apply chiefly to pine. But hardwood reforestation will also be revolutionized, chiefly by a trend toward managing selected species almost as if they were field crops. The trend started 10 to 15 years ago with cottonwood. Still in development is a system of growing high volumes of sycamore for pulpable fiber in 2 to 5 years. Initial stocking is about 10,000 trees per acre, obtained by laying cuttings horizontally and end to end in a shallow furrow.

Short-rotation hardwood culture will gain in popularity from two major advantages—high yields and low labor require-

ments for harvesting. From cottonwood and sycamore the system will be expanded to species such as green ash and sweetgum.



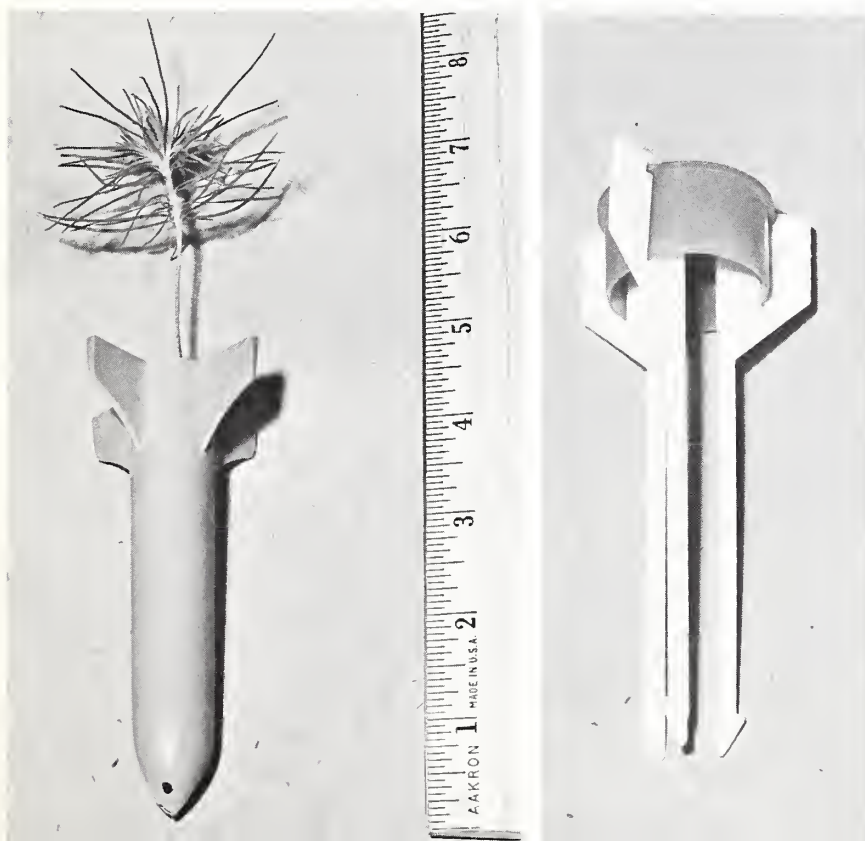
Wildlife, recreation, and aesthetics are of major concern to today's forest managers. The challenge, and one that will be met, is to increase all products of the forest, even though the land base for wood production is shrinking.

Planting and seeding will not be restricted to timber species. Shade-tolerant trees important for game food and beautiful flowers will be established or retained in the understories of plantations. Areas clearcut for regeneration will be smaller and less conspicuous than at present. Rights-of-way throughout the Nation total more than 50 million acres. Many that bisect forest lands will be planted with low-growing species valuable for game food, fiber, and beauty.

In short, Mann said, real multiple-use management will be incorporated into the reforestation revolution.

Details of Mann's prognostications appeared in an article, "On the Horizon: Revolutionary Changes in Reforestation," in *FORESTS & PEOPLE* magazine early in 1973. Reprints are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.

In one type of container designed for aerial planting, fins on the top side of the plastic bullet stabilize its flight to the ground. In another, (right) a fin or stabilizer is attached to three struts on a device for sowing plugs from an aircraft.



New Book Available On Forest Culture

In response to the national interest in forest management, the USDA Forest Service has issued a new handbook summarizing knowledge of methods for harvesting, regenerating, and maintaining 37 major forest tree types in the United States.

The 124-page book, "Silvicultural Systems for the Major Forest Types of the United States," also deals with the importance of wildlife, recreation, and water, as well as timber, in choosing forest culture systems.

The book summarizes the silvicultural systems that appear biologically feasible in each of 37 major U. S. forest types. Though it is intended primarily for forest managers, it is also suitable for laymen, according to Forest Service Chief John R. McGuire. He points out that increasing demands on the Nation's forests for more and different benefits require increasing flexibility in methods of forest culture. Some silvicultural systems are best suited to areas where scenic beauty is of primary interest. Others apply to lands managed to meet needs for forest products. The handbook also explains where certain systems are not suitable because of natural hazards, such as windstorms or pests, or because of the structure of existing forests.

Copies of the book, Agriculture Handbook 445, are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.

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The southern Mississippi Valley had 37 percent more cropland in 1969 than in 1950.



Hardwood Symposium Scheduled in November

Improved utilization of hardwood trees growing on southern pine sites, a major problem to the southern forest products industry, will be the subject of a symposium at the Fontainebleau Motor Hotel in New Orleans November 6 & 7.

The program includes papers in which leading authorities will assess the supply of this abundant but marginal forest resource. They will also discuss current and proposed methods of utilization, forest management alternatives, and innovative ways of handling, harvesting, and chipping hard-

woods.

Sponsors of the meeting are the Mid-South Section of the Forest Products Research Society and the Southern Forest Experiment Station of the USDA Forest Service. Dr. Charles W. McMillin, Southern Station research scientist in Pineville, Louisiana, is chairman.

Additional details and pre-registration forms may be obtained from Dr. McMillin, Southern Forest Experiment Station, 2500 Shreveport Highway, Pineville, Louisiana 71360.